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AN

ESSAY

ON THE

ENTROPEON,

OR

INVERSION OF THE EYE-LIDS.

BY PHILIP CRAMPTON, M. D.

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TO

SOLOMON RICHARDS, ESQ.

President

OF THE

Royal College of Surgeons in Ireland,

&c. &c.

MY DEAR SIR,

IN acknowledging the advantages I have derived from your friendship and instruction, I feel that I expose my little work to a severe test. What has it not to fear from the disappointment of those, who will look in the work of the pupil for some traces of the hand of the master? But possessed as I am with the belief, that the practice I recommend is calculated to be of utility to mankind, I should be wanting in my duty to society and to you, were I to suppress its strongest claim to attention, and my greatest pride, the honour of your approbation.

I am,

My dear Sir,

Your very affectionate,

And obliged Friend,

PHILIP CRAMPTON.

Dawson Street, Dublin,
Nov. 1, 1804.

La methode de traiter cette maladie a passé des anciens jusqu'à nous, et l'usage en la transmettant semble en avoir consacré la pratique; mais le peu de succès qui en resulte, doit enfin nous engager à abandonner une operation au moins inutile pour adopter un procédé qui paroît plus propre à remplir les vuës qu'indique le derangement de la partie affectée.

Bordenave *sur le Renversement des Paupières.* Mem. Acad. de Chirurg. vol. xiii. p. 150.

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AN

ESSAY,

&c.

SECTION I.

While medicine rested solely upon authority, detached observations were but little regarded. The science was encumbered, without being enlarged, by systematic compilations and voluminous commentaries. But it was at length discovered, that in medicine, as in other sciences, the judgment and industry of individuals could be most advantageously employed in observing with accuracy, and recording with truth. To the application of this principle is the rapid progress of surgery during the last century, distinctly to be traced; the works of Petit, Le Dran, and Pott, and the Memoirs of the Academy of Surgery of Paris, affording at once examples of its practice, and monuments of its advantages. Under the shelter of such authorities, I offer these few pages to the public: the subject, I trust, will not be thought unimportant, though limited to the consideration of a single disease of the eye; as its object is to recommend a simple and effectual remedy for one of the most painful and refractory diseases to which the human frame is liable.

The disease which is the subject of this Essay, has been termed Trichiasis and Entropeon by the Greeks, and Inversio Palpebrarum by the Latins. A number of fanciful distinctions, founded on supposed differences in its causes, have been made by both. The term "inversio palpebrarum" so well describes the disease, that a more minute account of it, with a view to distinguish it from other diseases of the eye, may appear superfluous; but, as there is one form of it, which is frequently mistaken for another affection of the eye, a particular description of the entropeon and its varieties is rendered absolutely necessary.

The following are the usual appearances and distinctive marks of the disease.

The conjunctiva appears highly inflamed; the cornea is in every instance more or less opake, and, if the patient has suffered a considerable time from the disease, its transparency is quite destroyed. The eyelid appears tumid and elongated; and the plaits or folds, which are so beautifully formed by the upper eyelid, in the motion which we term "opening the eye," are, when not entirely wanting, scarcely perceptible.

Upon a close inspection, the flat surface of the tarsus, which should lie horizontally with respect to the eye, or rather with its external or ciliary margin inclined upwards, appears to be closely applied to the cornea; and its ciliæ or hairs consequently turned downwards, and inwards upon the eye. The constant efforts which are made by the eyelids, to relieve the eye from this painful irritation, produce an incessant and violent nictitation; which, by increasing the friction upon the highly sensible conjunctiva, and strengthening the action of the orbicular muscle, aggravates every painful symptom, and confirms the disease. A constant inflammation, attended with excruciating headach, intolerance of light, epiphora, and excoriation of the cheeks, are the natural consequences. As the exciting cause never ceases to act, the patient's sufferings are without intermission: his rest is destroyed, his appetite and health impaired, and the total blindness, which sooner or later succeeds, affords no mitigation to his torment. When children, or very young persons, have suffered long from the disease, the neck and shoulders frequently become distorted. The head inclines to the shoulder, while the shoulder is raised to support the head *.

There is a variety of this disease, no less common than distressing, which, as it is unattended by the distinctive mark of hairs lying upon the cornea, may the more easily be confounded with other diseases of the eye, and more particularly with the ophthalmia tarsi. In this variety, the rough and ulcerated surface of the tarsus rubs against the cornea, but the hairs are either entirely wanting, or so minute, as to be only discernible by the most accurate inspection. I recollect that,

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* For an account of the connexion between this deformity and the disease in question, see page 33.

in one instance, in which, with the naked eye, I could not discover a single hair proceeding from the tarsus, I perceived, by the help of a magnifying glass, that the cartilage was studded with short black hairs, which, upon every motion of the eye, abraded the surface of the cornea. I have little doubt, but that many of the incurable sore eyes, which have been termed scrofulous, are of this kind *.

The entropeon most commonly attacks the upper eyelid, sometimes the lower, and more rarely the upper and lower together. It seldom confines itself to one eye only. Persons of all ages are equally liable to it; but those who from a scrofulous constitution, from the influence of climate, or from certain habits of life, are exposed

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* This variety did not escape the notice of the ancients. Paulus Ægineta observes (lib. vi. chap. viii.), "that, although distichiasis, or that species of entropeon, in which there is an inordinate growth of hairs, proceeds from the too great humidity of the eyelid. If the humour is acrid, it destroys the hairs altogether; and," he well remarks, "the suture of the eyelids is as necessary here as in phalangosis, in which the margin of the eyelid, armed with its hairs, is turned in upon the eye." See case of Murphy.

to the exciting cause of ophthalmia, become peculiarly subject to it *.

There are some other affections of the eyelids, which, though by no means proceeding from the causes of entropeon, properly so called, as they may be referred to trichiasis, should be taken notice of in this place. These are accidental derangements in the order of some particular hairs of the ciliæ, without any degree of inversion of the margin of the eyelid itself. These irregularities are, sometimes, produced by the cicatrix of a wound, or ulcer upon the tarsus. Sometimes, the small encysted tumours, which so frequently appear upon the margins of the eyelids, displace the hairs in their vicinity, some of which they push inwards upon the eye. In this case, the hairs proceed from the base of the little tumour, or even from the cicatrix, which remains after its extirpation, like radii from a

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* The entropeon is wonderfully common among the lower orders of the Irish. I have been informed by Mr. Hewson, a gentleman upon whose accuracy I may entirely depend, that in the southern parts of Ireland the inversion of the eyelids is one of the most frequent causes of blindness. Thousands suffer from it in Egypt. See note to page 17.

centre. Tufts of hair are occasionally produced by the conjunctiva, which lines the eyelid; and I once saw a tuft of very strong hairs proceeding from the sclerotica.

I shall not trespass upon the patience of my readers, by detailing to them, as is usual, the theory and practice of all the great masters in surgery, from the time of Hippocrates to the present day, but briefly state their opinions with respect to the causes of the disease. These I shall collect from the works of Hippocrates, Celsus, Ægineta, and Ætius; and they will serve for an history of the doctrine of the disease, and of the methods of cure, which have been acknowledged and practised from the earliest ages to the present day.

The ancients, who in general ascribed every difference, even in the degree of a disease, to a difference in the exciting cause, admitted two distinct cases of entropeon, to which they assigned as many distinct causes. In the first, which they termed distichiasis, a supernumerary row of hairs, within the natural and ordinate arrangement of the ciliæ, were described as proceeding from the internal margin of the eyelids *. These, by rubbing against the cornea, excited violent pain, inflammation and all its consequences. This affection was supposed to be produced by too great humidity of the eyelids †. And an analogy was discovered between this exuberant growth of hair and the luxuriant herbage of a marshy soil ‡.

The second case of entropeon was that, in which the margin of the eyelid, armed with its hairs, fell upon the eye. To this they indifferently applied the names of ptosis or phalangosis ||; and the derangement was supposed to

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* " Distichiasis (id est, ordo pilorum geminatus) est exortus pilorum præter naturam, ad naturalem pilorum palpebræ ordinem accedens." PAUL. ÆGINET. lib. vi. cap. 8.

† " Ex fluida affectione originem trahens."—PAUL. ÆGINET.

‡ " Pilorum vero subcutionem distichiasin (id est, duplicem pilorum ordinem) fiant autem hæ affectiones, et presertim duplex ordo, ex multa humiditate, quemadmodum enim in terra, largitas aquarum, plurimas herbas profert, sic etiam in palpebris, &c."—ÆTIUS, Tetr. iii. Sermo iii. cap. 66.

Paré uses the same simile: but he merely translates Ætius. Without insisting upon the justness of the analogy, it is right to observe, that the ciliæ, when inverted, grow in great profusion and with peculiar strength.

|| " Vocant autem medici palpebræ laxationem phalangosin aut casum."—ÆTIUS, Tetr. ii. Sermo iii.

proceed

proceed from the relaxation of the external skin of the eyelid †.

These are the principal causes of entropeon, which have been handed down to us from the earliest ages; and our later systematic authors, in recording them unaltered and unimproved, have, at least, the merit of fidelity. I should not omit to mention two modern theories of the disease which have lately been proposed, one by Mr. B. Bell, the other by Mr. Ware. Mr. Bell thinks, in addition to the causes above enumerated, that the inversion of the tarsus may sometimes be produced "by an unequal spasmodic exertion of some of the fibres of the orbicularis muscle:" he does not, however, describe the means of ascertaining the existence of this affection of the muscle, nor does he state that he has ever observed it ‡. Mr. Ware says, "it is manifest that when the trichiasis affects the upper eyelid, it must be owing to a relaxation of the levator palpebræ and a contraction of the superior part of the orbicularis; whereas in the case of trichiasis affecting the lower lid, it can only arise from a relaxation of the skin and a contraction of the inferior part of the orbicularis*." Upon such a subject as this Mr. Ware's opinion should have the greatest weight; and were it upon a point of practice, rather than question his authority, I should doubt the accuracy of my own observation; but as in this instance he merely gives a speculative opinion, I feel myself at liberty to examine whether it be well founded.

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† "Pili vero, qui in palpebrâ sunt, duabus de causis oculum irritare consueverunt, nam modo palpebræ superioris summa cutis relaxatur et procedit, quo fit ut ejus pili ad ipsum oculum convertantur, qua non simul cartilago quoque se remisit: modo sub naturali ordine pilorum alius ordo subcrescit, qui protinus intus ad oculum tendit."—Celsus de Re Medicâ, lib. viii.

‡ See B. Bell's System of Surgery, vol. iii. p. 276.

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* See Ware on Ophthalmy, p. 70.

SECTION II.

THE operations for the cure of the entropeon may be divided into the palliative and the radical. By the palliative I understand all attempts, whether by extirpation, or by different contrivances for altering their direction, to prevent the ciliæ from lying on the surface of the eye. By the radical, I mean all operations, which have for their object the eversion, or the total destruction of the cartilaginous tarsi themselves.

From the view which has been already taken of the disease and its varieties, it is evident, that the palliative cure can only be applicable to those cases of entropeon, or, more properly speaking, of trichiasis, in which the derangement is confined to some particular hairs of the ciliæ, the tarsi retaining their natural position. Hippocrates seems so well aware of the insufficiency of the palliative treatment of the entropeon, that he confines himself merely to the consideration of the radical cure. Celsus, who has been copied almost verbatim by every author that has succeeded him, recommends the following operation for the destruction of " supernumerary or displaced hairs." " The eyelid is to be raised by an assistant, so that the operator can see the origin of the offending hairs. He is then to push a red-hot spear-shaped needle through one third of the thickness of the eyelid, at the distance of about one line from its margin, and to run it along the whole length of the tarsus, beginning at one angle, and terminating at the other." The object of this operation was, to burn the roots of the hairs *, and thus destroy those which were displaced, and prevent the generation of new ones.

The next operation which he proposes, is more complicated and less likely to be effectual. This consists in passing through the eyelid a needle strung with a woman's hair, from within outwards at one angle of the eye, and from with-

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* " Ut omnes pilorum radices adustæ emorientur."—CELSUS, lib. vi.

out inwards, at the other. The ends are then to be tied; and, in the noose which is thus formed, the inverted hairs are to be included, and bound down to the eyelid.

This operation, which, I should conceive, must be nearly impracticable, and, at all events, ineffectual, is to be found described with precision, and recommended with confidence, by almost every systematic writer, who treats of the disease, from Celsus, to Fabricius ab Aquapendente. I should add, however, for the honour of Celsus, that, though the operation was first described by him, he was not the inventor of it.

The next in order of the palliative operations is to be found in the works of Ætius and Paulus Ægineta. This consists in the evulsion of the hairs; and different contrivances are recommended for preventing their return; such as the application of red-hot needles to the holes from whence the hairs proceeded; and of acrid, and even caustic substances to the tarsi. Hence we find whole columns of articles "ut evulsi pili non renascantur *."

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* Ætius, Tetr. ii. Sermo iii.

I have given the most powerful of these the fairest trial, but have never been successful with any. The lapis infernalis always increased the disease; as the cicatrix which it produced upon the tarsus, by opposing an obstacle to the growth of the hairs in the natural direction, forced many of them inwards upon the eye.

The same authors recommend that the inverted hairs should be glued down to the external skin of the eyelid; by which means, they supposed, their direction would be so altered, that they could no longer molest the eye: accordingly we are furnished with a catalogue of "pilorum agglutinatoria *."

This practice, not much insisted on by the ancients, and entirely neglected by the moderns, has been lately revived, and strongly recommended as superseding the use of all other remedies for the cure of the entropeon †. But it is evident, that as long as the margin of the eyelid itself is inverted, all attempts to alter the direc-

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* Æginet. lib. vii.

† B. Bell's System of Surgery, vol. iii.

tion of the ciliæ must be quite ineffectual in removing the disease.

The suspension of the eyelid by means of the dysuture of the ancients is strongly recommended by Scultetus[*] and Dionis in recent cases; and where children have been the subjects of it, I have employed them with advantage. The most convenient are made of two narrow strips of leather, one of which is to be adapted to the length and curvature of the eyelid. To each of these, three threads are to be attached at equal distances. One of these pieces is to be glued to the affected eyelid, as near as possible to its ciliary margin, the other to the forehead[†]. As they should be placed exactly opposite to each other, when they are drawn together by means of their threads, the margin of the eyelid is drawn upwards, and somewhat outwards, good sticking-plaster, assisted by a well-applied compress, answers the purpose nearly as well *.

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[*] Armament. Chirurgicum.

[†] Scultetus recommends the following agglutinative:

℞ Sang. dracon.
Sarcocoll.
Mastich. āā ʒj.
Album. ovi q. s.

We have next to consider the different operations which have been proposed with a view to the radical cure of the entropeon.

These had for their object the removal of the offending hairs from the surface of the eye, either by the eversion of the margin of the eyelid, or by its total destruction. It will be quite unnecessary to dwell upon the different modes by which the latter object was to be effected, as the destruction of the cartilaginous tarsi, by any means, is followed by consequences no less distressing than those arising from the disease it was intended to remove.

To be convinced of this, it is only necessary to take a view of the structure, attachments, and uses of the tarsi; but as the consideration of that subject will necessarily occur in another part of this work, I shall, to avoid useless repetitions, postpone it for the present. With respect to the

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* It is plain, that this method can only be employed with advantage, when the disease is confined to the upper eyelid; as, from the mobility of the cheek, the degree of extension of the ligatures would be perpetually varying.

mode of operating, suffice it to say, that, in obstinate cases, it was recommended to remove the cartilaginous tarsi either by the knife [*], or by the actual [†], or potential [‡] cautery.

We have still to describe the operations which have been performed upon the eyelids, with the intention of restoring the inverted cartilage to its natural position.

These operations consist in different methods of removing a portion of the external skin of the eyelid, and of bringing the lips of the wound into apposition. This removal of the skin may be effected either by ligature, the knife, the cautery, or caustic. The principle of the operations is the same in all. They only differ in the manner in which they are performed, and in the subsequent treatment of the wound.

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[*] Heister.

[†] The Egyptians applied pieces of red-hot gold to the margins of the eyelids, in order at once to destroy the cartilage and the hairs. The entropeon was so common in the neighbourhood of Alexandria, that the natives frequently performed this dreadful operation on their children, as preventive of the disease.

[‡] Prosper. Alpinus de Morb. Egypt.; Maitre-Jean, Malad. des Yeux.

In addition to these operations, which were confined to the external skin of the eyelid, the actual cautery has been applied to the levator palpebræ, upon the supposition that the disease depended on the relaxation of that muscle *. And Mr. Ware advises "the circumference of the ciliary edges to be enlarged by an incision at the outer angle, or by a complete division of the cartilage called tarsus through the middle," upon the supposition that in certain cases the cartilage is contracted in length. These operations shall be considered in the proper place.

Though Hippocrates is concise, even to obscurity, it is easy to perceive that his operation differed but little, in all essential points, from the operation of the most enlightened surgeons of the present day. I shall transcribe his own words from the translation of De Foe, and beside them I shall place a description of the operation, as it is now generally performed in the great hospitals of London. This very accurate description I have been favoured with by a gentleman, whose character as an anatomist and a surgeon is so

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* See Ware on Ophthalmy, p. 73, and Case, p. 102.

deservedly high, that, in differing from him in opinion, I feel disposed to distrust my own*: but when the sequel of the cases which I have subjoined, shall have been duly considered, I trust, I shall stand acquitted for having abandoned an operation, which, though resting upon some of the highest authorities, had, in my hands, at least, proved ineffectual. "Pilos in palpebras enascentes trichosin vocant curaveris si subjectum acui foramen filum habenti, in superiore palpebræ parte acuminatæ, et tensæ, per punctura factæ, deorsum transmiseris; fila extensa censueris et deligaris quoad decidat. Ac hæc quidem sufficiant, bene si res habet, alioqui si quid deficiat, eadem rursus facienda."

The method of performing the operation, as described by the gentleman alluded to, is as follows: "The integuments, with that part of the orbicularis palpebrarum which forms the eyelid that is inverted, must be held between the fingers and thumb of the surgeon upon one side, and by an assistant in the same manner on the other side, so as to bring *a. a.* Fig. I. opposite to B. B. A crooked needle, armed with a ligature, is to be passed from *a.* to B. on one ſide; and the needle is to be cut from the ligature, which is to be left in. The same is to be done on the other side. The eyelids are to be held as before; then, with a pair of scissars, the parts from *a. a.* to B. B. are to be cut away, care being taken not to cut the ligatures. The edges of the wound are now to be brought together, and the ligatures tied. The wound will heal by the first intention."

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* Not having an opportunity of soliciting the permission of this gentleman to mention his name, since the communication of his mode of operating has been made to me by a common friend, I do not find myself at liberty to do so.

It appears to me, that the only difference between the operation described by Hippocrates, and that last noticed, is, that the portion of skin which, in the one case, is intercepted and destroyed by ligature, in the other case is removed by excision.

Were I to transcribe the operation for the radical cure of the entropeon from Celsus, I should have to repeat, almost verbatim, the words of the modern operator. To avoid prolixity then, I shall merely notice the principal alterations which have been made from the time of Celsus to the present day. I have to remark, that the only difference between the operations, as described by the ancient and modern practitioners, consists in the time of making the sutures. Celsus first removes a portion of the external skin of the eyelid, and then makes his sutures; while, on the other hand, the professor alluded to first passes his ligatures, and then removes the portion of skin contained between them.

The first alteration of any consequence in the operation is to be found recorded in the works of Ætius and Paulus Ægineta. This consists in what they term the "subsectio palpebrarum." Previous to the removal of any portion of the external skin of the eyelid, they direct the surgeon to turn the inverted tarsus outwards, either by holding the ciliæ between the finger and thumb of the left hand, or by passing a needle, armed with a ligature, through the eyelid, just at the middle of its margin. He is then with a sharp-pointed instrument to make an incision through the internal membrane of the eyelid, extending it from one angle of the eye to the other. This incision is to run parallel to, and a little above, the tarsus*. The ligature (if one has been used) is now to be withdrawn, and the operation is to be finished in the usual manner.

The operation, as described by Ægineta and Ætius, continued to be recommended, with the omission of the subjection of the eyelid, until the time of Dionis†, who practised about the beginning of the last century. He merely mentions the operation as expedient, when the disease proceeds from a particular cause. I cannot, however, without anticipating myself, shew, in this place, how nearly he arrived at a knowledge of the true cause and seat of the disease; but, unfortunately, his veneration for the ancients confined his genius, and another century was allowed to pass away without an effort towards improvement.

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* "Et paulo internus quam siti sunt pili pungentes subsectionem in marginem a magno angulo ad parvum usque pertingentem faciamus."—PAUL. ÆGINET. lib. vi.

† Demonstrat. vi. ᵃ.

SECTION III.

In order to estimate the respective merits of any operation, which may be proposed for the cure of entropeon, it will be necessary to have a clear conception of the proximate cause of the disease. As this is to be deduced as well from an enlarged view of the disposition and structure of the parts affected, as from an examination of the disease itself, and the effects of the operations which have been performed for its relief, I am necessarily led to an anatomical and physiological description of the eyelids and their appendages.

In this description I shall endeavour to be as concise as possible, dwelling only upon those points in the anatomy which bear upon the theory of the disease.

The upper eyelids may be considered as transverse curtains, which cover the eye completely when the muscles which sustain them cease to act. They are composed of various parts, so delicately adjusted, and so intimately connected with each other, that a very small derangement in one produces a disorder in all. The different parts from which they are formed, are common integuments, cellular texture, muscle, ligaments, cartilage, membrane, glands, ducts, and hairs.

The broad ligament and cartilage, or tarsus, may be considered as the basis of all the rest.

The broad ligament of the tarsus appears to be a production from the periosteum, which arising from within the superior and inferior parts of the orbit from angle to angle, terminates in the tarsi of the upper and lower eyelid. The broad ligaments then and their tarsi exactly represent the eyelids; and the other parts are superadded for the purpose of giving that variety in structure and motion which they are found so eminently to possess.

The tarsi are thin elastic cartilages, forming the basis of the anterior part of the eyelids, to which they give firmness and figure. The superior tarsus is nearly semicircular. The inferior is rather a longitudinal segment of an ellipse; both are of a conchoidal shape, having their concave surfaces closely applied to the anterior part of the globe of the eye. The greatest height of the superior tarsus is about two fifths of an inch, that of the lower not above one fifth *. At their external angles they are connected by a strong fold of the conjunctiva internally, and by the common integuments of the eyelid externally.

The uses of the tarsi are manifest and great. By their means the motions of the eyelids, so necessary for the purpose of distinct vision, and even for the preservation of the organ of sight itself, are performed with celerity and precision. The superior tarsus, by its firmness and extent, prevents the upper eyelid from being wrinkled internally during the action of the levator pal-

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* From the books which are usually put into the hands of students, very erroneous ideas are generally entertained of the dimensions of the tarsi. They are described as "thin cartilages forming the *margins* of the eyelids, and the greatest height is stated to be one eighth of an inch." See System of Anatomy, &c.—It is the more necessary to remove this error, as it leads to dangerous and ineffectual practice.

Mr. Ware, p. 73, directs "a knife to be passed below the cartilage, that is, one eighth of an inch in the whole."

pebræ; and both tarsi, by their firmness, maintain in their proper direction the ciliæ, which would otherwise lie upon the cornea. The external edges of the tarsi are furnished with an irregularly planted double or treble row of strong and pointed hairs. Those of the upper eyelid are inclined upwards, while those of the under one have a curvature downwards. When the eye is closed, as in sleep, the tarsi, by the apposition of their external edges, form a triangular-shaped canal for the conveyance of the superfluous tears to the "puncta lachrymalia."

The hairs are of use not only in excluding insects, and other extraneous matters, from the eye, but also in preventing the too perpendicular rays of light from falling on the cornea.

Immediately upon and external to the broad ligament of the tarsus, lie the fibres of the orbicularis palpebrarum muscle, running in concentric ellipses round the eyelids, which they completely cover. Their external axis, which may be considered the origin of the muscle, is situated at the outer edge of the orbitar process of the superior maxillary bone, and their internal at the nasal process of the same bone. After spreading a few fibres upon the tarsi*, the muscle forms two tendons or ligaments, which may be considered the nasal termination of the tarsi. These ligaments uniting in the figure of a Y placed horizontally, form the round tendon of the orbicularis muscle. The orbicular muscle is covered externally by cellular texture and common integuments.

Upon the inside of the broad ligament of the upper eylid, and at right angles with the tarsus, lies the "levator palpebræ superioris." This muscle arises from the upper edge of the "foramen opticum of the sphænoid bone, immediately above the "levator oculi." Its fibres expanding as they run along the roof of the orbit, are lost in the fold which is formed by the conjunctiva of the eyelid before it is reflected over the anterior surface of the eye†, partly in the external integument of the eyelid.

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[*] These fibres are by some anatomists described as a distinct muscle, and named "musculus ciliaris."

[†] Before I proceed to a description of the conjunctiva, I should wish my readers to have a clear conception of this attachment

The conjunctiva covers the anterior hemisphere of the eye, to which it is connected by an extremely delicate and transparent cellular texture immediately under the edge of the superior part of the orbit. It forms a broad loose fold, and is then reflected over the internal surface of the upper eyelids, where it is strongly con-

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attachment of the "levator palpebræ superioris" to the conjunctiva, as upon this attachment depend some of the most striking peculiarities of the entropeon. I have therefore exhibited a back view of the eyelid. The drawing, which was made by a very eminent artist, was taken from a recent preparation now in my possession. I have been the more particular upon this head, as anatomical writers have fallen into a strange error in describing the insertion of the levator. Zinn, in his great work "De Oculo Humano," says, that the tendon of the levator palpebræ superioris runs down between the tarsus and integuments, to be inserted upon the lower margin of the latter. Lieutaud, Portal, Haller, and Sabatier maintain, that the tendon terminates upon the upper or convex margin of the tarsus. That it is not inserted upon either margin I ascertained by the following dissection. I raised the conjunctiva of the upper eyelid, beginning at the inferior margin of the tarsus; and continuing my dissection beyond its superior or semicircular edge, I found that the tendon of the levator remained attached to the conjunctiva upon one side, and to the integument of the eyelid upon the other. The levator palpebræ, therefore, is not inserted into the tarsus; but merely connected with it by means of the attachment of this last to the conjunctiva, and to the integuments.

Explanation of PLATE I.

This Plate exhibits a back View of the Eyelids.

A, The superior tarsus.
1, Its superior margin.
2, Its inferior margin.
B, The inferior tarsus.
C, A loose fold which is formed by the conjunctiva of the eyelids before it is reflected over the anterior hemisphere of the eye.
D, The levator palpebræ turned back from its origin.
δ, Some of its fibres inserted into the integument of the eyelid.
E, A strong fold of the conjunctiva, forming the connecting ligaments of the tarsi at the inner canthus.
F, A fold of the same membrane, forming the connecting ligaments of the tarsi at the outer canthus.

nected with the levator palpebræ. It also invests the inferior eyelid; but the very limited motion of this last renders a fold in the conjunctiva unnecessary. In each eyelid the membrane terminates upon the ciliary margin of the tarsus, to which it gives a coat. At the external commissure of the eyelids it forms a strong fold, which answers the purpose of a connecting ligament to the tarsi.

The conjunctiva does not preserve an uniform texture upon the different parts which it invests. Upon the cornea it is extremely thin, and perfectly transparent; upon the sclerotica it becomes more dense; but to both its adhesion is so slight, that it can be easily raised upon the point of a tenaculum, and even dissected off the eye. Upon the eyelids it forms a dense and vascular membrane, from which a fluid is secreted, which preserves the transparency of the cornea, and diminishes the friction produced by the constant motion of the eye.

From the very lax state of the conjunctiva, which is necessary to admit of the free motion of the eye in every direction, it would follow, that in every sudden motion of that organ upwards and backwards, the membrane would be thrown into irregular folds, which by falling upon the cornea, would at once obstruct the movements of the eye, and interfere with vision. But this is obviated by the nice adjustment of the levator palpebræ to the conjunctiva; for at the same moment that the "attollens oculi" acts in rolling the eye upwards, the "levator palpebræ" contracts in order to remove the eyelid from before the axis of vision, and draws back with it the loose conjunctiva upon which it is inserted, and the tarsus with which it is connected. Thus by one contraction of this muscle the eyelid is raised, and the loose conjunctiva is lodged in the triangular space which I before described as contained between the roof of the orbit and the superior surface of the globe of the eye. But should the conjunctiva by any means become so contracted in its extent as to confine the free motions of the eye, it must necessarily follow, that upon rolling the eye upwards and backwards, the yielding margin of the eyelid upon which the conjunctiva terminates will be drawn inwards upon the eye. When the contraction increases (and we know that a disposition to contract is common to all secerning membranes), so that the folds are not only obliterated, but that the internal membrane becomes actually shorter than the external integument; the margin of the tarsus deriving no support from without, and constantly acted upon from within, readily yields, and becomes permanently inverted *.

Although this may happen independent of the action of the levator palpebræ and orbicularis palp. muscles, it is easy to conceive that their contraction must operate in increasing the disease. And first with respect to the levator palpebræ: I have only to remind my readers of the attachment of its fibres to the conjunctiva, and of this last to the tarsus; to make it at once evident that every contraction of the muscle, by

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* The action of the shortened conjunctiva upon the tarsus, can be rendered evident by a simple experiment. Hold the eyelashes of the upper eyelid between the fingers and thumb, and draw the eyelid gently downwards, then roll the eye upwards, and you will feel the tightened conjunctiva forcibly drawing the eyelid upwards, and rolling the tarsus inwards,

drawing backwards, and consequently tightening the conjunctiva to which it is attached, must operate forcibly in increasing the inversion of the cartilage.

When describing the orbicularis palpebrarum muscle, I observed that some of its fibres, which have been distinguished by the name of musculus ciliaris, ran over the tarsi near to their extremities at the inner canthus, to be inserted into the angular connecting ligaments. When the vicious inclination of the tarsus is once formed, it is plain that every strong contraction of this muscle must operate in confirming it.

When describing the symptoms of entropeon, I particularly mentioned the extreme pain which persons afflicted with it experience on attempting to look upwards. This has been long since observed by others, and more particularly of late by the celebrated Professor Scarpa *. But the true cause

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* Professor Scarpa is of opinion, that the tarsus is seldom as much inverted towards the external as towards the internal canthus; that the wry neck which frequently attends the disease is produced by the constant efforts of the patient to remove the axis of vision from the offending hairs. "Pour cela, ils

cause of it has been overlooked by all. After a patient and minute examination of all the causes which could operate in producing this sudden increase in the inversion of the tarsus upon rolling the eye upwards, I satisfied myself that it could only proceed from a contracted state of the conjunctiva. My conclusions did not however rest upon reasons *à priori*, however plausible. An examination of the membrane itself confirmed the fact. In the first case I examined with attention, I perceived, instead of the pale and polished surface of the conjunctiva of the eyelid, a granulated fleshy production, covering the entire surface of that membrane; this substance increasing in thickness as it proceeded upwards, completely filled up the triangular-shaped space

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ils inclinent d'une maniere desagréable la tête et le cou: cette circonstance produit à la langue des combures vicieuses du cou et des epaules, &c."—Scarpa, Malad. des Yeux, vol. i. p. 178. The inclination of the head obliquely upwards, however, is equally observed, when the whole of the cartilage of both eyes is inverted, and consequently cannot proceed from the cause assigned to it by Professor Scarpa. The distortion is the consequence of the constant attempts to raise the axis of vision without rolling the eye upwards, and consequently drawing the hair inwards upon the cornea.

between the roof of the orbit and the superior surface of the eye, where the great fold of the eyelid should have been lodged. In some instances, however, the conjunctiva, though much contracted in its extent, is but little altered in its texture; and in such cases the above-mentioned space is filled up by the thickened and œdematous cellular substance of the eyelid.

If I have been fortunate enough to carry my readers with me through this tedious description, I feel convinced that they will admit my inference, and acknowledge that a contraction of the internal membrane of the eyelid, and not an elongation of the external integument, is the immediate cause of the entropeon.

A mere inspection of the eyelid must satisfy us that an elongation of its external skin would never produce the disease. The numerous folds which we perceive in the eyelids of old and relaxed persons, demonstrate that the external integument gives no support to the tarsus; consequently the inversion of the one can never be produced by the relaxation of the other.

It may at first sight appear impossible that a contracted state of the conjunctiva should be able to produce that form of the disease in which a double row of hairs appear to proceed from the tarsus, the tarsus retaining its position. But a more attentive observation will, I have no doubt, remove the difficulty.

The under row of hairs are neither supernumerary nor displaced with regard to the tarsus, though their curvature is altered by lying upon the convexity of the cornea *. In such cases of the disease as I have had an opportunity of observing, the cartilage was evidently inverted, and if any hairs were supernumerary, they were those which grew in the natural direction of the ciliæ; but I am rather inclined to think that in such cases the inversion of the cartilage is not complete; the inner range of hairs alone touch the cornea, and are retained there by the inclination of the tarsus, and by the humidity of the eye; the upper ranges of the ciliæ, still retaining

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* Professor Scarpa does not allow that there is ever a supernumerary row of hairs, but thinks that in what has been termed distichiasis, the hairs are displaced without inversion of the tarsus.

their disposition to point upwards, preserve an horizontal direction.

Thus we are led to measure the margin of the tarsus by the upper range of the ciliæ, and to suppose that the inner row, which lies upon the cornea, is inordinate or supernumerary.

A contracted and thickened state of the internal membrane of the eyelids is a frequent consequence of inflammation. The affection is either temporary or permanent, general or partial. The temporary most frequently attacks children, and succeeds immediately to the acute ophthalmia, to which they are so liable.

I call it temporary, as it frequently subsides with the inflammation that excited it, or is removed by the simplest means.

The permanent more frequently attacks people farther advanced in life, and is rarely the consequence of a single inflammation.

With the lower classes of the people, among whom this disease is most prevalent, little attention is paid either to cleanliness or comfort: they suffer for months under chronic inflammation of the eyes, without applying for relief, or even washing away the acrid discharge, which is constantly secreted by the inflamed membrane. The consequence of this neglect is excoriation and consequent contraction of the skin at the external angle of the eyelids, followed by a contraction of the fold of the conjunctiva, which forms the internal ligament of the tarsi.

This of itself determines the tarsus inwards: but the mischief does not cease here; for by a property common to all inflamed membranes, the conjunctiva throws out fleshy granulations, and becomes at once thickened and contracted. When this state of the conjunctiva is general, the margins of the eyelids are both completely inverted; but when limited, only a portion of the tarsus is inverted, corresponding to the extent to which the membrane is diseased.

SECTION IV.

I CAN now with more advantage return to the consideration of the operations which have been proposed for the radical cure of the entropeon. I have before mentioned that the inversion of the tarsus was supposed to be produced by a relaxed state of the external integuments of the eyelid; and the method of cure which arose from the theory naturally consisted in the removal of the superfluous skin, with the intention of restoring the parts to their original dimensions and situation.

From the view which has been taken of the parts which are engaged in the disease, few will be found to support the theory, and the advocates for the practice can only appeal to the history of its success as an argument for its efficacy,

This test, apparently so just, is in the present instance fallacious: first, because I shall be able to prove, that the relief which is afforded by the operation is seldom permanent; and secondly, because daily experience convinces us how little credit is due to authorities in favour of any remedy which seems to arise out of an acknowledged and mistaken theory *. But the authorities, though admitted, are contradictory; for some surgeons, and those of the highest character, while they describe the operation admit its insufficiency †; and the dreadful operations which have been proposed as substitutes by others, is an indirect admission to the same effect upon their parts: such are the applications of actual and potential cauteries ‡ to the tarsi, with a view to their destruction, and their com-

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* The suture of the eyelids for the cure of the entropeon rests upon no higher authority, and has not been more generally practised, than the semilunar incisions for the cure of the entropeon or inversion of the eyelids. This operation, after being universally practised and recommended for above 2000 years, was in the middle of last century discovered to be quite ineffectual.

† "There are cases, however, in which none of these methods will be sufficient to effect a cure."—Ware on Ophthalmia, p. 73.

‡ Cortunnius de Trichiasi.

plete amputation by the knife *. The truth is, that the removal of a portion, for instance, five or six eighths of an inch of the external skin of the eyelid, is in most cases sufficient to restore the cartilage to its proper situation. But in every case which I have had an opportunity of observing some months after the operation had been performed upon the upper eyelid, the disease had returned.

I know it may be objected, that a sufficient quantity of skin had not been removed; but it

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[*] Heister: his words are very remarkable: after describing the operation *by suture*, he says, sometimes the disease is so great as to destroy the figure of the eye; and so obstinate and inveterate as to return again after repeated performance of the operation, which renders the case incurable: and he adds, "if the means which have been proposed fail, there remains but one, and a lamentable method of removing the disorder, by amputating the tarsi, or the cartilaginous borders of the eyelids themselves; which the patient had better submit to than be blind."—Part II. p. 370.

This is a truly lamentable method, as it is calculated to produce pains as intolerable, and a deformity more hideous than the disease it was intended to remove. The case of J. Patson, who in despair amputated his own tarsi with a pair of scissars, shews that the patient has not at his option the miserable alternative which Heister proposes; as the person alluded to derived no advantage from the operation.

will appear from the cases that in some instances the disease returned after the operation by suture had been twice performed. In those cases, although the skin of the upper eyelid was almost entirely removed, the tarsi were more inverted than ever *.

This I conceive may be easily accounted for. In the natural state of the eyelid, its external integument is so loose as to afford ample room for the extensive motions of the tarsus. That no part of this skin is superfluous, appears from the following observation: when we look directly upwards, the eyelid is drawn so completely within the orbit (in order to remove it from before the axis of vision), that no part of it appears except its ciliary margin. It is plain then, by removing a considerable portion of the external integument, that we not only prevent the tarsus from being

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* See Case of Mary Muchleroy. The celebrated Professor Richter of Gottingen makes this remarkable observation upon the subject for the operation for the entropeon: "I have often performed the operation for the entropeon, and have for the most part found that, however much skin I had cut away, I had not cut off enough, and that consequently I had only lessened, not cured the disease."—Richter's Sur. Obs. p. 182.

drawn backwards, but eventually determine its inferior margin inwards against the eye.

This effect of the operation is exhibited in Plate III. ii. Add to this, that the inflammation necessary for the adhesion of the edges of the wound, is communicated to the subjacent broad ligaments and conjunctiva, which adhering to the cicatrix gradually contract with it, and preserve their original proportion to the length of the eyelid.

The operation of cauterizing the levator palpebræ stands precisely upon the same ground with the suture of the eyelid; it was merely a different, and perhaps more effectual method of shortening the eyelid. I gave the operation the fairest trial in two cases before I had seen Mr. Ware's publication; but the ill success which attended it in both instances, convinced me of an error in the theory, and determined me to abandon the practice. But there are cases, and those of frequent occurrence, in which the removal of the entire skin of the eyelid would not be sufficient to procure even a temporary eversion of the ciliæ.

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It was the consideration of such a case as this, while attempting in vain to turn out the cartilage, by pinching up the skin of the eyelid by my fingers, and even with forceps, that induced me to look for the cause of entropeon elsewhere than in the elongation of the external integument, a paralysis of the levator palpebræ muscle, or the displacement of the ciliæ.

Such cases as these are proofs of an error in the theory, and afford an insuperable objection to the operation by suture. Mr. Ware no doubt alludes to the form of the disease above described, when he says, " There are cases, however, in which none of these methods (suture, cautery, &c.) will be sufficient for the cure, as where the circumference of the ciliary edges is not only inverted, but likewise contracted in length." Here then the disease cannot, as he at first supposed, depend on a paralysis of the levator muscle, and a contraction of the orbicularis, and accordingly he proposes a method of cure adapted to what he conceives to be the peculiar nature of the case. " Under these circumstances," he adds, " relief is to be obtained in no other way than by enlarging the circumference of the ciliary edges: this may be done either by an incision at the outer angle, or by a complete division of the cartilage called tarsus in the middle." In the year 1802, I twice performed the first of these operations, assisted by Mr. Richards; but the patients did not derive the smallest advantage from it. Nor can I conceive that it should be otherwise; for admitting the cartilage be contracted in length (which I can scarcely suppose possible), it is to be remembered that it is likewise *inverted.* Now, though an incision at the outer angle of the eyelid might enlarge the "circumference of the ciliary edges," it could not possibly restore the inverted cartilage to its position; but any advantage which might be derived from the operation could be but temporary, as it is impossible by any means which can be devised to prevent the wound from uniting, for the divided parts must be constantly in apposition. I have not attempted the division of the tarsus through the middle, as the effect of such an operation would inevitably be to produce an inversion of the margin of the eyelid; to be convinced of this, it will only be necessary to recur to the structure and uses of the tarsi. But an accident furnished me with an opportunity of placing the matter beyond a doubt. A woman applied to the Meath Hospital with a partial inversion of the tarsus of the upper eyelid: upon examination it appeared that the cartilage had been completely divided at the distance of about three lines from its external extremity: it was the lesser portion which was inverted. She said the disease immediately succeeded to a wound which she had received on the eyelid from a piece of broken china which had been thrown at her. As Mr. Ware does not relate any cases in which the operations have been performed, and does not state that he had actually performed them himself, I have examined them with a freedom to which, as speculative matters, they are peculiarly exposed.

A thickened and contracted state of the conjunctiva being admitted as the cause of entropeon, the remedy becomes obvious. It consists in removing the stricture, and restoring the parts to their natural dimensions and position. The mere division of the conjunctiva from one angle of the eye to the other, is not sufficient to fulfil the first of these intentions; as its thickest and strongest fold is a little within the external canthus. In fact, it there forms the internal connecting ligament of the tarsi. In the natural state of the eye, this fold or ligament is sufficiently loose to admit of the separation of the tarsi to a considerable angle; but when contracted by inflammation, the cartilages are so closely applied to each other, as in some instances to adhere, and thus diminish the area of the eye.

The first great object of the operation is, the division of this ligament. This should be done so as completely to liberate the extremities of the tarsi towards the outer canthus. But as the extremities of the tarsi towards the inner canthus, are confined, as well by the action of some of the fibres of the orbicularis, as by the contracted state of the conjunctiva, they must be freed from their connexion with both.

The tarsus is then comparatively loose, and in the worst cases can with ease be everted. It remains but to perform the subsection of the eyelid described page 21, to complete that part of the operation which relates to removing the contraction of the conjunctiva.

In the subjoined Cases, the method of operating will be particularly described. We have now to direct our attention to the second, and no less important, intention in the method of cure: *the retaining the parts in their natural position, till, by recovering their original healthy state, they are enabled to perform their functions.* For these purposes, the suspensoria palpebrarum described in p. 15, may occasionally be employed with considerable advantage. But their application is limited to the mildest and most recent cases of the disease; for when the conjunctiva is much thickened and contracted, or when the disease is seated in the lower eyelid, they are quite ineffectual. For three years I laboured to discover a substitute of more perfect efficacy, and of more easy and general application; and I have at length the happiness of being enabled to recommend an instrument eminently possessing both these qualities.

Its only claim to originality consists in its application; as, with some trifling alterations in shape, it differs very little from the elevator of Pellier. (See Plate.) It is to be applied in the following manner: as soon as the tarsus is completely liberated at each of its extremities, and along its entire length, the patient should be desired to look upwards, while the eyelid should be gently raised by the fingers of the surgeon; the convex part (C) of the instrument, should then be pushed gently backwards, between the roof of the orbit and the superior surface of the globe of the eye: the legs A A should then be laid upon the forehead, previously guarded with a thin compress; and the whole should be retained in its situation, by a strop of linen, covered with carpenter's glue, and a calico bandage brought twice round the head; the whole secured to a tight cap by a few pins. As the legs of the instrument have a considerable curvature outwards, so as scarcely to touch the forehead, except at their extremities (B B), care should be taken not to draw the bandage tightly. I usually allow the patient himself to perform this part of the operation; telling him only to draw the bandage so tight as to sustain the eyelid, and turn its margin outwards, without pressing upon the globe of the eye.

In order perfectly to comprehend the principle upon which this little instrument acts, and consequently the better to direct us in the mode of its application, it is necessary to recollect some parts of the theory of the entropeon, and of the physiology of the eyelids, which have been advanced in a former part of this work.

To assist the memory of my readers I shall recapitulate, in few words, such parts of each as it is most important to recollect. When the eye is voluntarily opened, the upper eyelid is not drawn vertically upwards, but backwards, describing a line parallel to the anterior and superior surface of the eye over which it moves. When the eye is completely open, the eyelid is lodged in the space contained between the roof of the orbit, and the superior surface of the eye. But should this space be filled up by the thickened or contracted conjunctiva, the levator palpebræ cannot execute its functions. Every accession of inflammation contracts the conjunctiva. The conjunctiva terminates upon the margin of the eyelids; which deriving no support from without, and being constantly acted upon from within, readily yield, and become permanently inverted.

The disease, when once formed, tends to perpetuate itself; for the irritation excited by the hairs, maintains the inflammation, which originally produced their inversion. I conceive then that little instrument which I have so successfully employed, acts by forcibly pressing the parts into their natural situation, and retaining them there, until, by an alteration in their structure, they are enabled to perform their original functions.

This alteration it gradually effects; for by its pressure, it gently stretches the conjunctiva, and promotes the absorption of its diseased growth: and thus, by removing both cause and effect, it combats the disease with the surest prospect of success.

What I have hitherto said appears to apply exclusively to the entropeon of the upper eyelid: but the principle of the operation is the same in whichever eyelid the disease may be situated; the instrument only requiring such alterations as will readily suggest themselves to the operator: for instance, the curvature of the part C must be in an opposite direction, to accommodate it to the line of the orbit.

But the simplicity both in the mechanism and functions of the lower eyelid, renders its inversion an extremely rare occurrence.

Indeed the lower eyelid is exclusively liable to a directly opposite affection; the ectropeon, or eversion of its margin.—As this disease is a frequent consequence of the contraction of the integuments, which succeeds to wounds and burns in the neighbourhood of the lower eyelid, it is probable that surgeons, from observing this fact, were, by a natural and just train of reasoning, led to practise the operation by suture, for the cure of the entropeon. Their practice, no doubt, would have been as successful as it was rational, had they only employed it for the cure of the inversion of the lower eyelid; but in extending its application to the upper eyelid, they proceeded farther than they were warranted by analogy or supported by success.

My readers will, I trust, excuse this digression, as they cannot but be pleased to discover, that a practice so highly sanctioned by authority, should have some foundation in experience.

When the margin of the eyelid has been inverted for a considerable length of time, I have in general found it necessary for some time after the tarsus had been restored to its position to glue the hairs down to the external skin of the eyelid, in order to alter their curvature: without this precaution, they will frequently fall down before the eye like a curtain, or even touch the cornea with their points, which have acquired a curvature inwards.

As soon as the irritation produced by the hairs is removed, in order to promote the action of the absorbents, I usually order half a grain of calomel to be taken every night, and a small portion of the ophthalmic ointment of Janin *, or a drop of the vinous tincture of opium, to be put into the eye at bed-time. By these means, in the

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* Ointment of Janin.—Prenez sain doux, demi once; tutie preparée, bol d'Arménic, de chacun deux drachmes; precipite blanc, une drachme. Apres avoir lavé à trois differentes fois le sain doux dans l'eau de rose on y melera exactement les drogues ci-dessus qu'en aura en soin de require en poudre subtile.—*(Memoires sur l'Œil.)*

course of a very few weeks, the transparency of the cornea is in general completely restored.

I have now to consider the treatment of that form of the disease, in which the eye is offended by one or more hairs growing within the ordinate arrangement of the ciliæ, while the margin of the eyelid retains its proper position. A disease apparently so trifling, and for which the remedy seems so obvious, would scarcely have attracted the notice of surgeons, were it not found to be nearly as pernicious in its consequences, and at last as difficult in its treatment, as a much greater derangement.

Professor Scarpa says *, " that it is fortunate the disease is so rare, as experience has demonstrated that neither the extirpation of the offending hairs, nor the application of the cautery to their roots, nor even the suture of the eyelid, is sufficient to combat the disease." He adds, " L'art est encore imparfait sur le point qui doit plus que jamais provoque toute l'attention des praticiens."

I have seen but two instances of the disease:

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* Vol. i. p. 186.

in one, the derangement was occasioned by the pressure of a little tumour on the margin of the tarsus; in the other it was evidently the effect of a partial contraction of the conjunctiva; for upon looking along the eyelid, I observed a slight depression in its external edge immediately over the inverted hairs; and upon examining the eyelid internally, I could perceive a small white cicatrix directly opposite to and connected with the external depression.

From whatever cause the disease may proceed, the following operation will be found fully adequate to its removal: let the eyelid be well turned outwards by an assistant; let the operator then with a lancet divide the broad margin of the tarsus completely through by two perpendicular incisions, one on each side of the inverted hair or hairs: let him then, by a transverse section of the conjunctiva of the eyelid, unite the extremities of the perpendicular incisions. The portion of the cartilage contained within the incisions can then, if inverted, with ease be restored to its original situation, and retained there by small strips of adhesive plaster, or (perhaps what is better) by a suspensorium palpebræ, as described page 15, adapted to the length of the portion of the tarsus which it is intended to sustain, should one or two hairs be displaced without inversion of the tarsus. The same operation must be performed, taking care to raise above the level of the ciliary margin of the tarsus that portion of the cartilage which contains the inverted hairs. In some cases it might perhaps be found necessary completely to insulate a small portion of the margin of the tarsus, leaving it connected to the eyelid by the external integument only. As I have not had an opportunity of performing the operation in this way, I merely propose it as one to which I see no objection, should the disease prove refractory. In the only case in which I have had an opportunity of performing the operation before described, the success answered my warmest expectations. The poor woman who was the subject of it (see Case of Catharine Roarke), had for two years been rendered miserable by this painful disease; the moment the operation was performed she experienced relief; and now, at the interval of three years, I have the satisfaction of seeing that she continues perfectly well. The cornea, which before the operation was nearly opake, has gradually recovered its original transparency.

As a number of cases would extend this little work far beyond the limits which I have prescribed to it, I shall merely collect a sufficient number to illustrate the comparative advantages of the operation for the entropeon as it is generally practised, and that which I have the honour to propose.

CASES.

CASE I.

Anne Woods, aged thirty-five, a weaver, was admitted into the Meath Hospital on the 10th of April 1801.—The margin of the upper eyelid in both eyes was completely inverted. The eyelashes, which grew in great profusion, lay upon the surface of the eyes: the eyelids appeared tumid and elongated; the conjunctiva was highly inflamed; and the cornea was of a leaden colour, and so opake, that the iris could not be distinguished through it. She had from her infancy been afflicted with sore eyes; but she said she had not perceived the inversion of the hairs till within the last five years. She had formerly experienced temporary relief by getting the ciliæ plucked out; but finding that the succeeding hairs grew stronger and in greater abundance, she relinquished the practice. On the 8th of May, in the presence of some of the surgeons of the house, I applied the actual cautery to the levator palpebræ muscle of the left eye, by means of an instrument adapted to the convexity of the eyelid: the immediate effect of the operation was to restore the margin of the eyelid to its natural position. On the 3d of June I performed a similar operation on the right eye, and she was shortly afterwards discharged from the Hospital much relieved. It is to be observed, however, that whenever she turned the eye upwards, the margin of the eyelid was suddenly rolled inwards.

She returned to the Hospital on the 2d of October. The tarsi were as much inverted as ever. As I supposed that a sufficient quantity of the integuments had not been removed by the first operation, I advised her to submit to a second, and I hoped a more effectual one. On the 30th of March 1802, I performed the operation by suture, in the manner described page 19. In a few weeks she left the Hospital. She did not seem to have derived as much benefit from the second as from the first operation. I met her but a few months since, and was sorry to observe that the ciliæ were nearly as much inverted as before any operation had been performed. I could not prevail upon her to submit to another operation of any kind.

CASE II.

Mary Muckleroy, aged forty, was admitted into the Meath Hospital on the 20th of May 1802.—There was a complete inversion of the margin of both upper eyelids. The eyelids, though much thickened, did not appear elongated. The inverted tarſi were so firmly retained in their position, that by no effort with the fingers could the ciliary margins be completely turned outwards; the circumference of the ciliary edges was manifestly diminished from the adhesion of the tarsi at their extremities towards the lesser canthus. The disease commenced in the left eye about two years before she applied to the Hospital, and succeeded to a tedious ophthalmia. About a year afterwards the right eye became afflicted. On the 27th of May I applied the cautery (as in the case of Woods) to both eyelids. On the 12th of June there appeared to be no inversion of the ciliæ of the right eye; but those of the left were as much inverted as ever. On the 7th of July the operation by suture was performed on the left eye, and she left the Hospital at the latter end of the month apparently relieved. She returned in May 1803. The disease again attacked the left eye, and the hairs towards the angles of the right eye began to lie upon the conjunctiva. I performed the operation as described in the following Case—it succeeded completely on the right eye, but failed altogether on the left. The cause of this failure was the total destruction of the mechanism of the eyelid by the removal of so great a portion of the external integument (see Plate II.) by the cautery and excision.

Explanation of PLATE II.

This Plate represents the state of the Eyelid after a great portion of the Integuments had been removed by Cautery and Incision.

A, The inverted tarsus and ciliæ.
B, The shortened eyelid.
C, The cicatrix which remained after the operation.

It may be observed, that the loose fold of the integuments which permits the eyelid to be drawn *backwards* into the orbit, has been here completely obliterated, and it is easy to perceive, even from the Plate, how such an obliteration must operate in at once determining the tarsus inwards, and rendering the disease incurable.

CASE III.

Catherine Roarke, aged thirty, a servant, applied at the County Dublin Infirmary on the 10th of May 1802.—The margin of the upper eyelid of the left eye was completely inverted, and the ciliæ, which grew in great profusion, lay upon the surface of the eye. The sufferings of this unfortunate woman were almost intolerable. The constant friction of the hairs upon the highly sensible conjunctiva, excited and maintained the most acute degree of ophthalmia. A symptomatic fever, attended with excruciating headach, by depriving her of her appetite and rest, prevented her from gaining a livelihood, and rendered her situation truly deplorable. The disease commenced about ten years before she applied to the Hospital, and succeed e dto a violent attack of ophthalmia. The hairs had been frequently extirpated, and the margin of the tarsus from whence they proceeded had been rubbed with lapis infernalis; but from neither of these operations had she received any permanent advantage. On the 20th of May I performed the following operation, in the presence of Mr. Dease, and of Messrs. P. and C. Roney, surgeons to the County of Dublin Infirmary.—Having seated her with her back to a window, that she might open her eyes with greater ease, and her head being supported on the breast of an assistant, I raised the upper eyelid by means of the first and second fingers of my left hand, while I passed a very narrow, slightly-curved, and sharp-pointed bistoury between the eye and the eyelid at its external angle. I then pushed out the point of the knife so as to divide the internal connecting ligament of the tarsus and the external integument obliquely upwards. This incision was about three lines in length. I then made a similar incision at the internal angle, completely dividing the superior branch of the tendon of the orbicularis palpebrarum *. The eyelid immediately felt unconfined, and its mar-

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* The duct leading from the superior punctum lachrymale is divided in this part of the operation; but its division is attended with no bad consequences, as the new orifice remains pervious, and performs the function of the punctum lachrymale.

gin could with ease be turned outwards; however, I thought it necessary to divide the contracted conjunctiva; this was effected by running the knife along the internal membrane of the eyelid, beginning at the external and terminating at the internal angular section. As soon as the bleeding ceased the parts were washed and dried, and a suspensorium palpebrarum was applied in the manner described page 21. The first dressings were worn for thirteen days; they then became loose, and were removed; but the margin of the eye was completely restored to its proper position. However, three or four hairs that seemed to grow within the natural arrangement of the ciliæ, still rubbed against the cornea, and kept up a great degree of irritation. They were repeatedly extirpated, and various applications were tried to prevent their return; but they increased in number and strength after every operation. This determined me to take some decisive step. Upon examining the tarsus minutely, I perceived a slight depression on its external edge immediately over the inverted hairs, and a corresponding cicatrix on the internal membrane.

I per-

I performed the operation in the manner described in page 59. The portion of the tarsus that contained the inverted hairs was supported in its proper position by a suspensorium palpebrarum for almost three weeks, and the woman was perfectly and permanently relieved from her painful disease. In the month of February 1804, she was examined by Dr. Stokes *, Mr. Dease †, and Mr. C. Roney ‡

CASE IV.

On the 12th of June 1802, I performed the operation for the entropeon by suture, on both the upper and lower eyelid of a woman whose name I do not recollect. The tarsi appeared to be restored to their natural position. The woman returned to the Meath Hospital in the month of September 1802. The inversion of the lower

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† Professor of Anatomy and Surgery of the Royal College of Surgeons, Ireland.

‡ One of the Surgeons of the County Dublin Infirmary.

eyelid was completely removed, but the upper eyelid was more inverted than ever. She said (to use her own expressions), that " since the eyelid had been cut it *confined the eye*," and she felt as if there was a *welt* in the eyelid, which pressed upon the eye when she attempted to roll it.

CASE V.

John Doyle, aged forty, an hostler.—This was one of the worst cases of entropeon that I have ever met with. The margin of both upper eyelids was completely inverted. The circumference of the ciliary edges was so much diminished, owing to the adhesion of the tarsi towards the outer canthus, that by no effort could more than about one eighth of an inch of the cornea, opposite to the pupil, be uncovered; the external surface of both eyelids was excoriated, and yielded a copious acrimonious discharge: the irritation of the skin was constantly maintained by the overflow of the tears, which were prevented from passing the puncta lachrymalia. He said, the rawness of his eyelids and cheeks prevented him from washing his face, so that it may be easily supposed he exhibited a truly shocking spectacle. He attributed the disease to the small-pox, which he contracted when a young man; but he had not been prevented from following his occupation till within three or four years past.

On the 9th of October 1804 I performed the following operation upon the left eye. The patient's head being properly secured by an assistant, I passed a very thin and sharp-pointed bistoury (the point of which had been previously guarded by a piece of wax) between the eye and the eyelid, just at the external angle; then pushing out the point, I enlarged the circumference of the ciliary edges about a quarter of an inch, and then pushed the point through the eyelid at the internal angle, so as completely to separate the tarsus from its attachment to the tendon of the orbicularis; the internal surface of the eyelid could then with ease be completely exposed; it was thick and diseased to an extraordinary degree: I therefore made two or three deep incisions into its substance along its whole length; it bled freely, and the man already experienced much relief. As soon as the parts were washed and dried, I laid back the eyelashes upon the external skin of the eyelid, and secured them in that situation by laying over them a narrow slip of linen covered with carpenter's glue. As soon at the glue had become hard I applied the elevator of the eyelid in the manner before described. On the 12th the excoriated surface had become dry and scurfy, the eyelid had a more natural appearance, and its margin retained its proper position. I ordered him to use a small portion of the ointment of Janin * at night. On the 30th he could dispense with the use of the elevator; the tarsus and ciliæ presented a natural position; the eye was quite free from inflammation; and the cornea had recovered much of its transparency.

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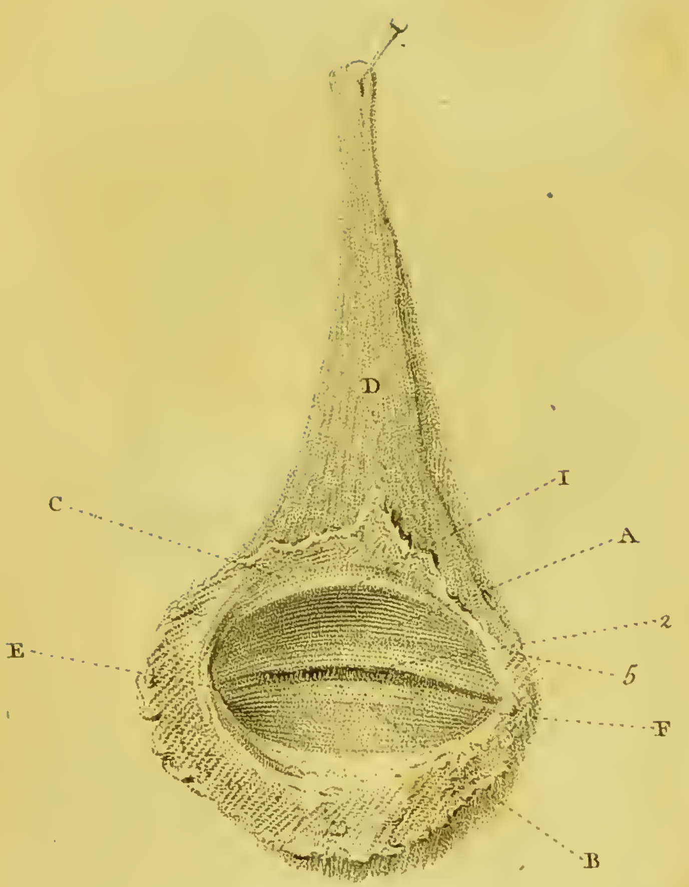
* See page 53.

CASE VI.

Anne Brennan, aged fifty, a servant, applied at the County of Dublin Infirmary in the month of August last. One half of the margin of the upper eyelid was inverted, and the eyelashes which proceeded from it lay upon the eye; the conjunctiva was highly inflamed; and the transparency of the cornea was much impaired. The vision of the other eye was completely destroyed in consequence of a large staphyloma. I performed the following operation on the eyelid affected with the partial entropeon. The patient's head being properly secured by an assistant, I passed a very thin and sharp-pointed bistoury (the point of which had been previously guarded by a small piece of wax) between the eye and the eyelid just at the external commissure of the tarsi; then pushing out the point, I divided the superior tarsus obliquely upwards and outwards, making an incision of about a quarter of an inch in length; then turning out the cartilage as much as possible, I made a second incision,

sion with its broad edge just at the middle of its margin, for it was there the inversion commenced. The inverted portion being thus as it were insulated, was easily restored to its proper position: the ciliæ were then laid back upon the skin of the eyelid, and retained in that situation by carpenter's glue. A suspensorium palpebræ, adapted to the length of the portion of the tarsus which had been inverted, was then applied in the usual manner. As soon as the glue was sufficiently hard, the ligatures were drawn so tightly as to raise the inverted portion of the tarsus *above* the level of the remaining portion of the cartilage. The dressings adhered for about fourteen days. The piece of leather attached to the eyelid then became loose, but the tarsus retained its natural position. Within these four days I had the satisfaction of shewing her to Mr. Dease, who had examined her before the operation had been performed; he was of opinion that neither the eyelid nor the eye exhibited any appearance of disease.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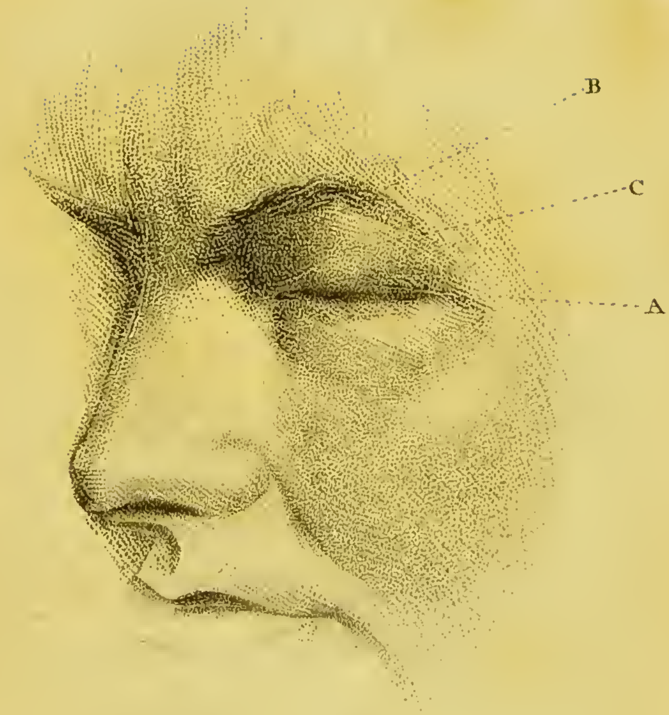
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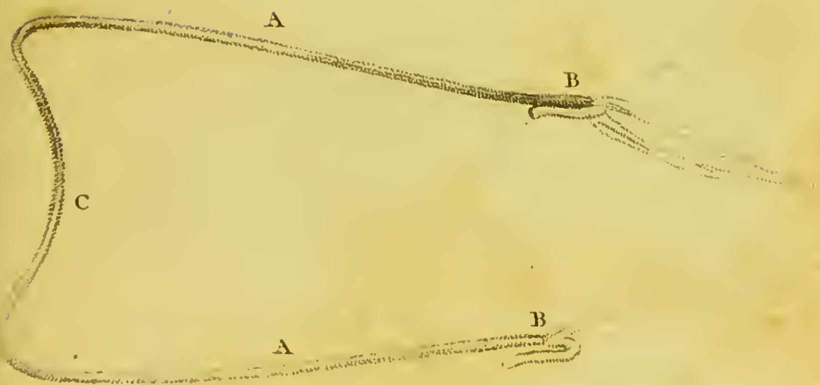
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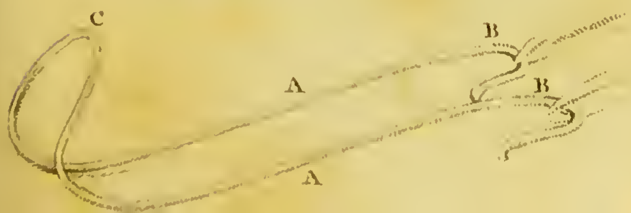
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APPENDIX.

Since I committed the preceding observations to the press, I have met with a case of entropeon, in which I think it is possible that the mere division of the tarsus and conjunctiva, and the subsequent suspension of the eyelid, might not be sufficient to cure the disease; and that, in addition to this operation, it might be necessary to remove a portion of the external skin of the eyelid: but it will appear that the circumstances which in this case might render that operation expedient were merely accidental, as the disease in its origin had no connexion with the elongation of the eyelid.

CASE.

Anne Lyons, aged thirty-five, applied to the Meath Hospital in the month of March last. The superior tarsi were completely inverted; the eyelids were œdematous; and the external skin of the right eyelid was so much elongated as to fall below the margin of the inverted tarsus. She was unable to open the eye except by pinching up the loose skin, and pressing it against her eyebrow by means of her fore-finger: by this means she preserved some degree of vision. It was easy then to account for the extraordinary elongation of the eyelid.

About two years ago a portion of the integuments of the left eyelid had been removed, upon the supposition that the disease depended upon its relaxation; but the inversion became more complete than ever, and she could not afterwards, as before, relieve herself by suspending the eyelid; the cornea soon became completely opake from the constant irritation excited by the hairs. In the month of April last I attempted to operate in the manner recommended in this Essay; but scarcely had I made the incision at the external angle, when she leaped up from her seat, and absolutely refused to have the operation completed; I therefore applied the silver elevator, which she has worn ever since, and she experiences so little inconvenience from it, that she will not submit to a painful operation upon the chance of obtaining a radical cure.

It appears then, even in this case, which was attended with such a remarkable elongation of the eyelid, that the operation by suture was not only ineffectual in procuring relief, but actually increased the disease. Notwithstanding this, I am inclined to think, that, *after the stricture upon the tarsi had been removed*, it might be expected to remove a portion of the superfluous integuments in order to enable the eyelid to perform its necessary functions.

THE END.

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